2014

SUBJECT : BIOLOGY	DAY – 1
SESSION : MORNING	TIME : 10.30 A.M. TO 11.50 A.M.

MAXIMUM MARKS	TOTAL DURATION	MAXIMUM TIME FOR ANSWERING
60	80 MINUTES	70 MINUTES

MENTION YOUR CET NUMBER	QUESTION BOOKLET DETAILS	
	VERSION CODE	SERIAL NUMBER
	A - 1	149073

DOs :

1. Check whether the CET No. has been entered and shaded in the respective circles on the OMR answer sheet.
2. This Question Booklet is issued to you by the invigilator after the **2nd Bell i.e., after 10.30 a.m.**
3. The Serial Number of this question booklet should be entered on the OMR answer sheet.
4. The Version Code of this question booklet should be entered on the OMR answer sheet and the respective circles should also be shaded completely.
5. Compulsorily sign at the bottom portion of the OMR answer sheet in the space provided.

DON'TS :

1. **THE TIMING AND MARKS PRINTED ON THE OMR ANSWER SHEET SHOULD NOT BE DAMAGED / MUTILATED / SPOILED.**
2. The **3rd Bell rings at 10.40 a.m., till then;**
   - Do not remove the paper seal present on the right hand side of this question booklet.
   - Do not look inside this question booklet.
   - Do not start answering on the OMR answer sheet.

SEAL

IMPORTANT INSTRUCTIONS TO CANDIDATES

1. This question booklet contains 60 questions and each question will have one statement and four distracters. (Four different options / choices.)
2. After the **3rd Bell is rung at 10.40 a.m.,** remove the paper seal on the right hand side of this question booklet and check that this booklet does not have any unprinted or torn or missing pages or items etc., if so, get it replaced by a complete test booklet. Read each item and start answering on the OMR answer sheet.
3. During the subsequent 70 minutes:
   - Read each question carefully.
   - Choose the correct answer from out of the four available distracters (options / choices) given under each question / statement.
   - **Completely darken / shade the relevant circle with a BLUE OR BLACK INK BALL POINT PEN against the question number on the OMR answer sheet.**

Correct Method of shading the circle on the OMR answer sheet is as shown below :

(1) ● (3) (4)

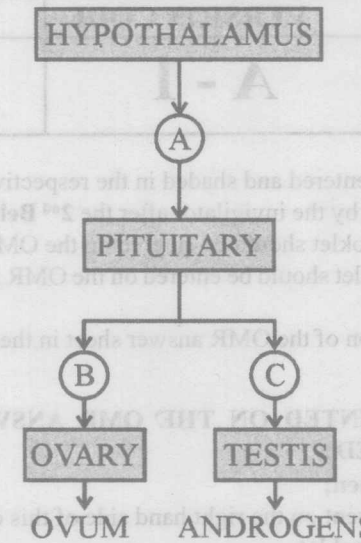
4. Please note that even a minute unintended ink dot on the OMR answer sheet will also be recognised and recorded by the scanner. Therefore, avoid multiple markings of any kind on the OMR answer sheet.
5. Use the space provided on each page of the question booklet for Rough Work. Do not use the OMR answer sheet for the same.
6. After the **last bell is rung at 11.50 a.m.,** stop writing on the OMR answer sheet and affix your LEFT HAND THUMB IMPRESSION on the OMR answer sheet as per the instructions.
7. Hand over the **OMR ANSWER SHEET** to the room invigilator as it is.
8. After separating the top sheet (Our Copy), the invigilator will return the bottom sheet replica (Candidate's copy) to you to carry home for self-evaluation.
9. Preserve the replica of the OMR answer sheet for a minimum period of ONE year.

1. Mating of two varieties of a cattle breed like Red Dane which have no common ancestors on either side of their pedigree up to 4-6 generations is an example for _____.

(1) Inbreeding (2) Cross breeding

(3) Out crossing (4) Inter-specific hybridization

2. Identify the hormones 'A', 'B' and 'C' that are labelled in the given flow chart :



(1) A – GnRH, B – ICSH, C – FSH

(2) A – GH, B – FSH, C – LH

(3) A – GnRH, B – PRL, C – ICSH

(4) A – GnRH, B – FSH, C – LH

3. **Statement A :** Photorespiration decreases photosynthetic output.

Statement B : In photorespiratory pathway, neither ATP nor NADPH is produced.

(1) Both the statements A and B are correct.

(2) Both the statements A and B are wrong.

(3) Statement A is correct and statement B is wrong.

(4) Statement B is correct and statement A is wrong.

Space For Rough Work

4. Identify the incorrect statement from the following :
   (1) The reservoir pool for phosphorous cycle is earth's crust whereas atmosphere is the reservoir pool for carbon cycle.
   (2) During carbon cycle and phosphorous cycle, there is very little respiratory release of carbon and phosphorous respectively.
   (3) Atmospheric inputs of phosphorous through rainfall are much smaller than carbon inputs.
   (4) Gaseous exchanges of phosphorous between organism and environment are negligible.

5. The result of the following reaction/experiment carried out by Avery et. al. on *Streptococcus pneumoniae* has proved conclusively that DNA is the genetic material ;
   (1) Live 'R' strain + DNA from 'S' strain + DNAase
   (2) Heat killed 'R' strain + DNA from 'S' strain + DNAase
   (3) Live 'R' strain + DNA from 'S' strain + RNAase
   (4) Live 'R' strain + Denatured DNA of 'S' strain + protease

6. Match the storage products listed under Column-I with the organisms given under Column-II; choose the appropriate option from the given choices.

	Column – I		Column – II
A.	Glycogen	p.	*Sargassum*
B.	Pyrenoids	q.	*Nostoc*
C.	Laminarin and mannitol	r.	*Polysiphonia*
D.	Floridean starch	s.	*Spirogyra*
		t.	*Agaricus*

   (1) A-r, B-s, C-p, D-t
   (2) A-s, B-r, C-t, D-q
   (3) A-t, B-s, C-p, D-r
   (4) A-q, B-p, C-s, D-r

7. Identify the desirable characteristics for a plasmid used in rDNA technology from the following :
   A. Ability to multiply and express outside the host in a bioreactor
   B. A highly active promoter
   C. A site at which replication can be initiated
   D. One or more identifiable marker genes
   E. One or more unique restriction sites
   (1) A, C and E only
   (2) B, C and E only
   (3) A, C, D and E only
   (4) B, C, D and E only

Space For Rough Work

8. Which compounds were used by Miller in his experiment for obtaining amino acids and other organic substances ?

(1) Carbon dioxide, water vapour and methane
(2) Methane, ammonia, water vapour and hydrogen cyanide
(3) Ammonia, methane, hydrogen and water vapour
(4) Ammonia, methane and carbon dioxide

9. Which of the following is true for eutrophicated water body ?

(1) High mineral content (2) High oxygen content
(3) Rich species diversity (4) Low organic content

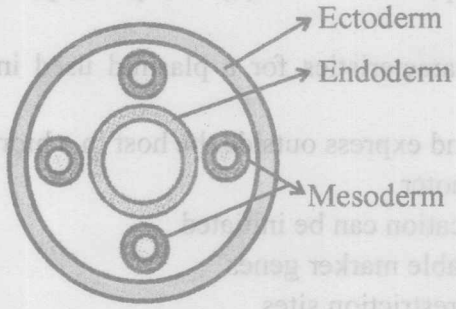
10. IUDs which are used by females _____.

(1) act as spermicidal jellies
(2) block the entry of sperms into vagina
(3) are implanted under the skin and they release progestogen and estrogen
(4) release copper ions in the uterus that increase phagocytosis of sperms

11. Which of the following hormones are secreted in large quantities during pregnancy in women ?

(1) hCG, progesterone, estradiol and FSH
(2) hCG, hPL, progesterone, estrogen and LH
(3) LH, estrogen and estradiol
(4) hCG and hPL

12. The kind of coelom represented in the diagram given below is characteristic of :



(1) Earthworm (2) Cockroach
(3) Round worm (4) Tape worm

Space For Rough Work

13. With respect to angiosperms, identify the incorrect pair from the following :

(1) Antipodals – 2n

(2) Vegetative cell of male gametophyte – n

(3) Primary endosperm nucleus – 3n

(4) Cells of nucellus of ovule – 2n

14. **Statement A :** For a particular character in an individual, each gamete gets only one allele.

Statement B : Chromatids of a chromosome split (separate) and move towards opposite poles during anaphase of mitosis.

(1) Both the statements are correct and B is the reason for A.

(2) Both the statements are correct and B is not the reason for A.

(3) Statement A is correct and statement B is wrong.

(4) Statement B is correct and statement A is wrong.

15. Internal bleeding, muscular pain, blockage of the intestinal passage and anaemia are some of the symptoms caused due to infection by _____.

(1) *Wuchereria* (2) *Trichophyton*

(3) *Ascaris* (4) *Plasmodium*

16. RNA interference which is employed in making tobacco plant resistant to *Meloidegyne incognita* is essentially involved in _____.

(1) preventing the process of translation of mRNA

(2) preventing the process of transcription

(3) preventing the process of replication of DNA

(4) preventing the process of splicing of hnRNA

17. The success of mammals on earth is largely because;

(1) They can conform to the changes in the environment.

(2) They can reduce metabolic activity and go into a state of dormancy during unfavourable conditions in the environment.

(3) They have the ability to maintain constant body temperature.

(4) They can take care of their young ones as they have mammary glands to suckle them.

Space For Rough Work

18. Which one of the following hormones also produces anti-inflammatory reactions in man and suppresses the immune response in addition to its primary functions ?

(1) Cortisol (2) Thymosin
(3) Thyrocalcitonin (4) Erythropoietin

19. Match the microbial products listed under Column-I with the related microbes given under Column-II; choose the appropriate option from the given choices.

	Column – I		Column – II
A.	Citric acid	p.	*Methanobacterium*
B.	Cyclosporin A	q.	*Monascus purpureus*
C.	Statin	r.	*Aspergillus niger*
D.	Gobar gas	s.	*Trichoderma polysporum*
		t.	*Clostridium butylicum*

(1) A-r, B-s, C-q, D-p
(2) A-t, B-q, C-s, D-r
(3) A-q, B-s, C-t, D-r
(4) A-r, B-s, C-q, D-t

20. *Marchantia* is considered as a heterothallic plant because it is _____.

(1) Heterogametic (2) Bisexual
(3) Monoecious (4) Dioecious

21. Identify the set of characteristics related to plants belonging to family Fabaceae from the following :

(1) Actinomorphic flower, syncarpous ovary and marginal placentation
(2) Persistent calyx, epipetalous stamens and leguminous fruit
(3) Papilionaceous corolla, axile placentation and leguminous fruit
(4) Vexillary aestivation of corolla, diadelphous stamens and monocarpellary, unilocular ovary

22. One of the following statements is incorrect with reference to biodiversity. Identify it.

(1) Biodiversity increases from higher altitudes to lower altitudes.
(2) Depletion in genetic diversity of crop plants is mainly due to the introduction of better varieties with high yield, disease resistance, etc.
(3) The richest reservoirs of animal and plant life (species richness) with few or no threatened species are called "biodiversity hotspots".
(4) Biodiversity decreases from the equator to polar regions.

Space For Rough Work

23. In castor and maize plants, _____.

(1) autogamy is prevented but not geitonogamy

(2) both autogamy and geitonogamy are prevented

(3) male and female flowers are borne by different plants

(4) the anthers and stigma are placed at different positions to encourage cross pollination

24. In garden pea, round shape of seeds is dominant over wrinkled shape. A pea plant heterozygous for round shape of seed is selfed and 1600 seeds produced during the cross are subsequently germinated. How many seedlings would have the parental phenotype ?

(1) 1600 (2) 800

(3) 400 (4) 1200

25. Which of the following events would occur in 'Lac-operon' of *E. coli* when the growth medium has high concentration of lactose ?

(1) The structural genes fail to produce polycistronic mRNA.

(2) The repressor protein binds to RNA polymerase and prevents translation.

(3) The repressor protein attaches to the promoter sequence and derepresses the operator.

(4) The inducer molecule binds to repressor protein and RNA polymerase binds to promoter sequence.

26. The mature infective stages of malarial parasite which are transferred from mosquito to man are _____.

(1) Sporozoites (2) Merozoites

(3) Trophozoites (4) Gametocytes

27. One of the following refers to Allen's rule :

(1) If the stressful conditions are localized or remain only for a short duration, an organism either migrates or suspends itself.

(2) Mammals from colder climates have shorter ears and limbs to minimize heat loss.

(3) An organism can move from a stressful habitat to a more hospitable area and return when the stressful period is over.

(4) Low atmospheric pressure in higher altitudes results in altitude sickness.

Space For Rough Work

28. Identify the DNA segment which is not a palindromic sequence :

(1) 5′ GAATTC 3′
3′ CTTAAG 5′

(2) 5′ CCCGGG 3′
3′ GGGCCC 5′

(3) 5′ GGATCC 3′
3′ GGTACC 5′

(4) 5′ GCGGCCGC 3′
3′ CGCCGGCG 5′

29. During somatic hybridization in plants, _____.

(1) somaclones are produced in large numbers
(2) the apical meristems are cultured to get virus-free plants
(3) the cell walls and the middle lamella are digested before fusing the cells
(4) crop plants with higher levels of vitamins, proteins and minerals are hybridised

30. **Statement A :** The secretion of collaterial gland forms the egg case in cockroach.
Statement B : The development in cockroach is hemimetabolous.

(1) Both the statements A and B are correct and B is the reason for A.
(2) Both the statements A and B are correct and B is not the reason for A.
(3) Statement A is correct and statement B is wrong.
(4) Statement B is correct and statement A is wrong.

31. If a plant produces flowers when exposed only to alternating periods of 5 hours light and 3 hours dark in a 24 – hour cycle, then the plant should be a _____.

(1) Short day plant (2) Long day plant
(3) Short–long day plant (4) Day neutral plant

32. If there was no carbon dioxide in the earth's atmosphere, the temperature of the earth's surface would be _____.

(1) same as the present level
(2) more than the present level
(3) less than the present level
(4) dependent on the oxygen content in the atmosphere

Space For Rough Work

33. One of the following is incorrect about cancer cells :

(1) They exhibit the property of contact inhibition.

(2) They are metastatic.

(3) They exhibit mass proliferation.

(4) They are produced when cellular oncogenes of normal cells are activated.

34. The centrosome duplicates during the _____.

(1) S – phase of cell cycle (2) G_1 – phase of cell cycle

(3) G_2 – phase of cell cycle (4) Prophase of cell cycle

35. Match the items listed under Column-I with those given under Column-II; choose the appropriate option from the given choices.

	Column – I		Column – II
A.	Residual Volume (RV)	P.	4000 ml – 4600 ml
B.	Inspiratory Reserve Volume (IRV)	Q.	1100 ml – 1200 ml
C.	Vital Capacity (VC)	R.	1000 ml – 1100 ml
D.	Expiratory Reserve Volume (ERV)	S.	3000 ml – 3500 ml
E.	Inspiratory Capacity (IC)	T.	2500 ml – 3000 ml

	A	B	C	D	E
(1)	Q	R	S	T	P
(2)	R	T	P	Q	S
(3)	T	Q	S	R	P
(4)	Q	T	P	R	S

36. Which of the following statements is correct ?

(1) Elaioplasts store starch whereas aleuroplasts store proteins.

(2) Acrocentric chromosomes have only one arm.

(3) The core of cilium or flagellum is the basal body.

(4) Membranous extensions into the cytoplasm in cyanobacteria which contain pigments are called chromatophores.

Space For Rough Work

37. Sickle cell anaemia is caused due to the substitution of _____.

(1) Valine at the 6th position of alpha globin chain by glutamic acid

(2) Glutamic acid at the 6th position of beta globin chain by valine

(3) Valine at the 6th position of beta globin chain by glutamine

(4) Glycine at the 6th position of alpha globin chain by glutamic acid

38. **Statement A :** The primary transcript produced in eukaryotes is translated without undergoing any modification or processing.

Statement B : The hnRNA in humans has exons and introns.

(1) Both the statements A and B are correct.

(2) Both the statements A and B are wrong.

(3) Statement B is correct and statement A is wrong.

(4) Statement A is correct and statement B is wrong.

39. Knee joint is an example for _____.

(1) Ball and socket joint (2) Hinge joint

(3) Pivot joint (4) Gliding joint

40. Carefully read the following reactions carried out by nitrogen fixing bacteria. Identify the statement about these equations which is not true :

$2NH_3 + 3O_2 \rightarrow 2NO_2^- + 2H^+ + 2H_2O$ .....(A)

$2NO_2^- + O_2 \rightarrow 2NO_3^-$ .....(B)

(1) Step (A) is carried out by *Nitrosomonas* or *Nitrococcus*.

(2) Step (B) is carried out by *Nitrobacter*.

(3) Both the steps (A) and (B) can be called nitrification.

(4) Both the steps occur only in photoautotrophs.

Space For Rough Work

41. Match the vegetative propagules listed under Column-I with the plants given under Column-II; choose the appropriate option from the given choices.

Column – I		Column – II	
A.	Rhizome	p.	*Agave*
B.	Offset	q.	*Bryophyllum*
C.	Sucker	r.	Ginger
D.	Leaf buds	s.	*Chrysanthemum*
		t.	*Eichhornia*

(1) A-r, B-s, C-p, D-q
(2) A-s, B-t, C-q, D-r
(3) A-r, B-t, C-s, D-q
(4) A-q, B-p, C-t, D-s

42. One of the following causes population explosion :
(1) Decrease in death rate, maternal mortality rate and infant mortality rate
(2) Decrease in death rate and increase in maternal mortality rate
(3) Decrease in infant mortality rate and increase in death rate
(4) Decrease in infant mortality rate and decrease in the number of people in reproductive age

43. _____ are the most abundant proteins in the living world.
(1) Ribozyme of plants and collagen of animals
(2) RuBisCO of plants and collagen of animals
(3) PEPcase of plants and keratin of animals
(4) Alcohol dehydrogenase of plants and melanin of animals

44. One of the chief reasons among the following for the depletion in the number of species making it endangered is _____.
(1) Greenhouse effect (2) Habitat destruction
(3) Over-hunting and poaching (4) Competition and predation

Space For Rough Work

45. In humans, what is the ratio of number of gametes produced from one male primary sex cell to the number of gametes produced from one female primary sex cell ?

(1) 1 : 1 (2) 1 : 3

(3) 1 : 4 (4) 4 : 1

46. Identify the incorrect statement from the following :

(1) Pyramid of energy is mostly upright, but sometimes it may be inverted.

(2) Pyramids of number and biomass may be either upright or inverted.

(3) Pyramid of biomass in sea is generally inverted as the biomass of fish far exceeds that of phytoplanktons.

(4) Food chains are generally short with few trophic levels as only 10% of the energy is transferred to each trophic level from the lower trophic level.

47. Match the organic compounds listed under Column-I with the explanation given under Column-II; choose the appropriate option from the given choices.

	Column – I		Column – II
A.	Phosphoenol pyruvate (PEP)	p.	6 – carbon compound
B.	Ribulose biphosphate (RuBP)	q.	2 – carbon compound
C.	Oxaloacetic acid (OAA)	r.	4 – carbon compound
D.	Acetyl co-enzyme – A	s.	5 – carbon compound
		t.	3 – carbon compound

(1) A-r, B-s, C-t, D-p

(2) A-q, B-r, C-s, D-t

(3) A-t, B-s, C-r, D-q

(4) A-t, B-p, C-q, D-r

48. Down's syndrome is an example for _____.

(1) Aneuploidy of sex chromosome

(2) Aneuploidy of autosome

(3) Syndrome caused due to gene mutation

(4) Loss of one sex – chromosome from the diploid set

Space For Rough Work

49. The interaction between the organisms of one of the following pairs is an example for commensalism :

(1) Wasps and fig tree (2) Cuckoo and crow

(3) Cattle or sheep and grass (4) Orchid and mango tree

50. The germ pores in the pollen grain are the regions _____.

(1) That can withstand high temperature and strong acids and alkalies

(2) Through which sperms are released into the female gametophyte

(3) Which are made up of lignin and suberin

(4) Which lack sporopollenin

51. Heroin is _____.

(1) A cannabinoid

(2) Diacetylmorphine (chemically)

(3) Commonly called 'coke' or 'crack'

(4) Used to treat mental illnesses like depression and insomnia

52. Thorns of *Bougainvillea* and tendrils of *Cucurbita* are examples for _____.

(1) Convergent evolution (2) Divergent evolution

(3) Adaptive radiation (4) Co-evolution

53. Some of the steps of DNA fingerprinting are given below. Identify the correct sequence from the options given :

A. Electrophoresis of DNA fragments

B. Hybridisation with DNA probe

C. Digestion of DNA by RENs

D. Autoradiography

E. Blotting of DNA fragments to nitrocellulose membrane

(1) C – A – E – B – D

(2) A – C – E – D – B

(3) C – A – B – E – D

(4) A – E – C – B – D

Space For Rough Work

54. 'Flocks' is _____.

(1) The primary sludge produced in sewage treatment

(2) A type of biofortified food

(3) A mesh-like structure formed by the association of bacteria and fungal filaments in sewage treatment

(4) The effluent in primary treatment tank obtained during sewage treatment

55. ADA deficiency results in _____.

(1) Increased risk of infertility

(2) Inability of the immune system to function normally

(3) Chromosomal disorders

(4) Decrease in the yield of crop plants

56. Parbhani kranti, a variety of bhindi (lady's finger), is resistant to _____.

(1) Bacterial blight (2) Yellow mosaic virus

(3) Black rot (4) Leaf curl

57. The globular head of myosin contains _____.

(1) Calcium ions in large quantities

(2) Troponin

(3) ATPase enzyme

(4) ATP

58. EcoRI is _____.

(1) a restriction enzyme

(2) a plasmid

(3) used to join two DNA fragments

(4) the abbreviation for bacterium *Escherichia coli*

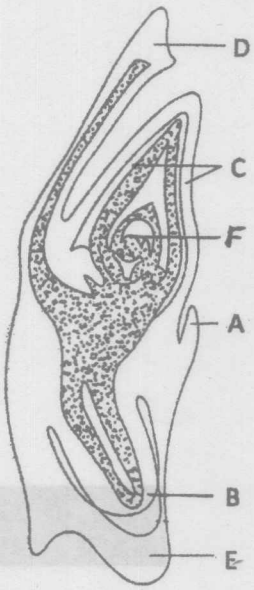
Space For Rough Work

59. 'Roquefort cheese' is ripened by using a _____.

(1) Type of yeast (2) Fungus

(3) Bacterium (4) Cyanobacteria

60. In this diagram showing the L.S. of an embryo of grass, identify the answer having the correct combination of alphabets with the right part :



(1) A – Root cap, B – Coleoptile, C – Scutellum, D – Coleorhiza, E – Epiblast, F – Shoot apex

(2) A – Shoot apex, B – Epiblast, C – Coleorhiza, D – Scutellum, E – Coleoptile, F – Radicle

(3) A – Epiblast, B – Scutellum, C – Coleoptile, D – Radicle, E – Coleorhiza, F – Shoot apex

(4) A – Epiblast, B – Radicle, C – Coleoptile, D – Scutellum, E – Coleorhiza, F – Shoot apex

Space For Rough Work

59. 'Roquefort cheese' is ripened by using a _____

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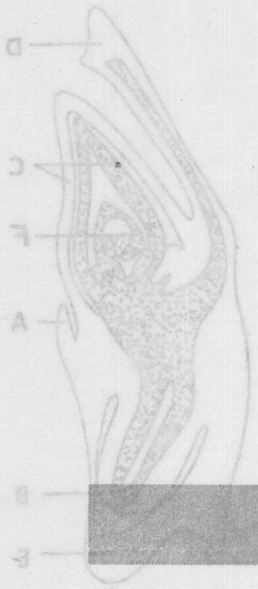
60. In this diagram showing the L.S. of an embryo of grass, identify the answer having the correct combination of alphabets with the right part :



(1) A – Root cap, B – Coleoptile, C – Scutellum, D – Coleorhiza, E – Epiblast, F – Shoot apex

(2) A – Shoot apex, B – Epiblast, C – Coleorhiza, D – Scutellum, E – Coleoptile, F – Radicle

(3) A – Epiblast, B – Scutellum, C – Coleoptile, D – Radicle, E – Coleorhiza, F – Shoot apex

(4) A – Epiblast, B – Radicle, C – Coleoptile, D – Scutellum, E – Coleorhiza, F – Shoot apex

Space For Rough Work

A-1
SEAL

Date : 24-MAY-

COMMON ENTRANCE TEST - 2014

ANSWER KEYS - BIOLOGY

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